



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/012,210	11/05/2001	Stephen V.R. Hellriegel	901115.435	5315
500	7590	06/07/2004	EXAMINER	
SEED INTELLECTUAL PROPERTY LAW GROUP PLLC			DINH, TUAN T	
701 FIFTH AVE			ART UNIT	
SUITE 6300			PAPER NUMBER	
SEATTLE, WA 98104-7092			2827	

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/012,210

Applicant(s)

HELLRIEGEL ET AL. 

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

## DETAILED ACTION

The Appeal's Brief filed on February 17, 2004 is persuasive, and the finality of that action is withdrawn.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4, 6-7, 9-10, 12-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Brodsky et al. (U. S. Patent 6,595,784).

Regarding claims 1-2, Brodsky et al. discloses a device as shown in figures 1-7 comprising:

a flexible substrate (10, column 4, line 20), see figure 1;

a plurality of contact pads (26A, 26C, column 4, line 25) on a first surface of the substrate (10); and

a strain relief structure (20, column 4, lines 23-24, column 5, lines 10-12), which is an aperture penetrating through the flexible substrate (10) from the first surface to a

Art Unit: 2827

second surface positioned between two of the plurality of contact pads (column 5, lines 13-15).

Regarding claim 4, Brodsky discloses the strain relief structure (20) in figure 1 is a thinned region of the flexible substrate (10).

Regarding claim 6, the strain relief (420), see figure 5 is centered on a line between centers of two of the plurality of contact pads (column 6, lines 59-62).

Regarding claim 7, Brodsky further discloses in figure 1 a plurality of electrical traces (16A, 16C) being in electrical contact with one of the contact pads (26A or 26C).

Regarding claims 9-10, 12-13, Brodsky discloses an flexible connector and a method of manufacturing a flexible connector as shown in figures 1-7 comprising:

a flexible substrate (10), a plurality of contact pads (26A, 26C) arranged in a first surface of the substrate (10);

a plurality of electrical traces (16A, 16C) formed on either first and second surfaces of the flexible substrate (10), each of the traces being in electrical contact with a respective one of the pads (26A, 26C); and

a plurality of apertures (620), see figure 7, each being function as a strain relief structure, penetrating through first and second surfaces of the substrate (610), the aperture (620) are arranged in a regular configuration and intercalated into the pads.

Regarding claims 14-15, Brodsky discloses a flexible connector as shown in figures 1-7 comprising:

a flexible substrate (610), a plurality of contact pads (626A-626C) formed on a first surface of the substrate and arranged in a regular configuration in a contact region of the substrate (610); and

means for increasing flexibility comprises a plurality of apertures (620 including 620A-620C), see figure 7, intercalates with the pads (626A-626C) and penetrating from the first to a second surfaces of the substrate, the second surface is opposite to the first surface.

Regarding claim 16, Brodsky discloses the means for increasing flexibility comprises a plurality of blind apertures (620 including 620A-620C), see figure 7, intercalates with the pads (626A-626C) and penetrating from the first surface to selected depth.

Regarding claim 17, Brodsky discloses the means for increasing flexibility comprises a thinning of the flexible substrate (610) in the contact region, relative to a thickness of the substrate outside the contact region.

3. Claims 1-2, 4, 6-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Markovick et al. (U. S. Patent 6,291,776).

Regarding claims 1-2, Markovick discloses a device in figure 2 comprising:  
a flexible substrate (14, column 4, lines 31-32), a plurality of contact pads (12, column 4, line 31) on a first surface of the substrate (14), and a strain relief structure, which is an aperture (10, column 3, lines 6-14, 27-41, and column 4, lines 30-31), positioned between two of the pads, see figures 2-3.

Regarding claims 4, 6, Markovick discloses the strain relief structure (aperture 10) is a thinned region of the substrate (14), and is centered on a line between centers of two of the pads (12).

Regarding claims 7-8, Markovick discloses in figure 6 further comprising a plurality of electrical traces (see a sketched of an attaching paper), each of the traces being in electrical contact with one of the pads (12), and the strain relief structure (aperture 10) is positioned and interrupted one of the traces.

Regarding claims 9-10, 12-13, Markovick discloses an flexible connector and a method of manufacturing a flexible connector as shown in figures 2-6 comprising:

- a flexible substrate (14), a plurality of contact pads (12) arranged in a first surface of the substrate (14);

- a plurality of electrical traces (see the sketched of the attaching paper) formed on either first and second surfaces of the flexible substrate (14), each of the traces being in electrical contact with a respective one of the pads (12); and

- a plurality of apertures (10), see figure 6, each being function as a strain relief structure, penetrating through first and second surfaces of the substrate (14), the aperture (10) are arranged in a regular configuration and intercalated into the pads.

Regarding claim 11, Markovick discloses in figure 6 further including breaking one of the traces with the forming the strain relief step (apertures 10).

Regarding claims 14-15, Markovick discloses a flexible connector as shown in figures 2-6 comprising:

Art Unit: 2827

a flexible substrate (14), a plurality of contact pads (12) formed on a first surface of the substrate and arranged in a regular configuration in a contact region of the substrate (14); and

means for increasing flexibility comprises a plurality of apertures (10), see figure 6, intercalates with the pads (12) and penetrating from the first to a second surfaces of the substrate, the second surface is opposite to the first surface.

Regarding claim 16, Markovick discloses the means for increasing flexibility comprises a plurality of blind apertures (10), intercalates with the pads (626A-626C) and penetrating from the first surface to selected depth.

Regarding claim 17, Markovick discloses the means for increasing flexibility comprises a thinning of the flexible substrate (14) in the contact region, relative to a thickness of the substrate outside the contact region.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 5, 8, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brodsky et al. ('784) in view of Furnival (U. S. Patent 3,977,074).

Regarding claims 3, 5, Brodsky discloses all of the limitations of the claimed invention, except for the aperture having, in a plane view, a rectangular shape. Furnival

Art Unit: 2827

shows a device as shown in figure 2 wherein the aperture (16) having a rectangular shape.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular shape aperture as taught by Furnival to employ in the device of Brodsky in order to improve more spaces, which is inexpensive and more reliable, for an interfacial connection.

Regarding claims 8, 11, Brodsky et al. discloses all of the limitations of the claimed invention, except for the strain relief structure is positioned such that it interrupts or breaks one of the traces.

Furnival shows an aperture (16) positioned such that it interrupts one of a plurality of traces (18) as shown in figure 2.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an aperture interrupted one of a plurality of traces in the device of Brodsky, as taught by Furnival, for the purpose of providing an isolation of electrical connection of conductive traces form on a device.

6. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markovick ('776) in view of Furnival ('074).

Regarding claims 3, 5, Markovick discloses all of the limitations of the claimed invention, except for the aperture having, in a plane view, a rectangular shape. Furnival shows a device as shown in figure 2 wherein the aperture (16) having a rectangular shape.



It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular shape aperture as taught by Furnival to employ in the device of Markovick in order to improve more spaces, which is inexpensive and more reliable, for an interfacial connection.

7. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brodsky ('784) in view of Markovick ('776).

Regarding claims 8, 11, Brodsky et al. discloses all of the limitations of the claimed invention, except for the strain relief structure is positioned such that it interrupts or breaks one of the traces.

Markovick shows an aperture (10), see figure 6 positioned such that it interrupts or breaks one of a plurality of traces (see the sketched of the attaching paper).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an aperture interrupted or break one of a plurality of traces in the device of Brodsky, as taught by Markovick, for the purpose of providing an isolation of electrical connection of conductive traces form on a device.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments are persuasive. However, the new ground rejection is still moot to reject all of claimed invention, see an explanation as above.

Art Unit: 2827

**Conclusion**

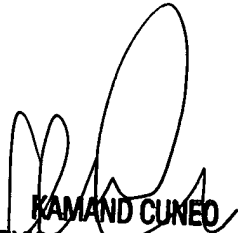
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stewart, Brodsky et al., and Moen et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Dinh  
May 25, 2004.

  
**KAMAND CUNEO**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**